An Overview of the U.S. Department of Energy's Yucca Mt. High-Level Nuclear Waste Repository Project

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1. The U.S. Department of Energy is proposing to construct, operate, and monitor and eventually close a geologic repository at Yucca Mountain in southern Nevada for the permanent disposal of "spent" or "used" nuclear fuel, and high-level radioactive waste.

2. This waste is currently being stored at 72 commercial nuclear reactor sites and 5 DOE defense sites across the U.S. Most of the commercial reactors are located in eastern states. Some of these commercial reactor sites are exceeding their capacity or are approaching storage limits.

3. Potential impacts in California from the proposed Yucca Mt. project include groundwater contamination in the Death Valley region as well as transportation impacts.

4. The national policy for the disposal of spent nuclear fuel from nuclear reactors, was set by the Nuclear Waste Policy Act (NWPA) of 1982, as amended in 1987.

    - The NWPA calls for spent nuclear fuel and other high-level waste to be disposed of permanently in a geologic repository beginning in 1998; DOE was not able to meet this deadline;

    - The NWPA amendment passed in 1987 established Yucca Mt., Nevada as the sole site for scientific evaluation. Previously there had been nine other sites in the U.S. under consideration including possible sites in Texas, Washington, Louisiana, Mississippi, and Utah. This list was later narrowed to three sites: Deaf Smith Co., Texas; Hanford, Washington; and Yucca Mt., Nevada.

    - The NWPA of 1987 directed the Department of Energy to study a single site at Yucca Mt., Nevada.

    - In 1998, DOE completed a viability assessment of Yucca Mt., as required by Congress, to provide Congress, the President and the public a progress report on the Yucca Mt. Site Characterization Project. Based on this viability assessment, DOE believes that the Yucca Mt. site is a promising site for a geologic repository.

- Federal agencies responsible for developing and licensing the proposed high-level nuclear waste repository include: the U.S. Department of Energy (overall project design and project development), the U.S. Environmental Protection Agency (setting the radiation exposure limits for the repository to protect public health and safety), and the U.S. Nuclear Regulatory Commission (reviewing the license application for the facility and implementing the EPA radiation standard).

- This year, the Environmental Protection Agency developed radiation standards for the repository (15-millirem limit and a separate groundwater protection requirement). In contrast the NRC is proposing 25-millirem limit.

5. The current schedule for the proposed Yucca Mt. repository is:

   - Public comments on the Draft EIS (due Feb. 9, 2000).

   - The Secretary of Energy reports to the President on whether the Yucca Mt. site is suitable for a geologic repository (2001);

   - DOE plans for Nuclear Regulatory Commission approval of the license for construction of the repository (2005).

   - DOE plans to open the repository at Yucca Mt. in 2010, at the earliest, and begin accepting waste.

6. California's review of the Yucca Mt. Project and potential impacts in California has been a cooperative, interagency effort.

   - In 1988, we formed an Interagency High-Level Waste Task Force to evaluate DOE's Site Characterization Plan for Yucca Mt., to address concerns regarding potential impacts in California from the proposed repository.

   - In 1989 this interagency group, coordinated by the Energy Commission, prepared comments on the Department of Energy's Site Characterization Plan. Under the direction of the Secretary for Resources Mary Nichols, the California Energy Commission is reactivating this working group.

7. The Draft Environmental Impact Statement (DEIS) is an assessment of the environmental impacts of developing and operating the repository, transporting nuclear waste to the site, and eventually closing the repository. (See NY Times article).

- The DEIS did not identify any potential environmental impacts that would be a basis for not proceeding with the licensing, operation and construction of the Repository.

- The concept of geologic disposal is to place packaged waste in excavated tunnels in geologic formations such as rock, salt or clay. A series of barriers, natural and man-made, are designed to isolate the waste for tens of thousands of years to minimize the amount of radioactive material that can reach the environment.

- Water is the primary means for radionuclides from a repository reaching the human environment. The major function of natural and engineered barriers are to keep water away from the waste to limit corrosion of the waste containers and possible release of radionuclides into the groundwater.

- The design of the repository is evolving; DOE is now relying on man-made barriers to prevent ground water from reaching buried waste containers and corroding them; originally the plan was to rely more upon geologic barriers.

- The repository would be constructed about 1,000 feet below the surface and about 1,000 feet above the water table (unsaturated zone).

- Criticisms of the DEIS include that it provides no analyses of the routes to the repository and no specific evaluation of impacts on states along transportation corridors;

8. Potential Impacts in California from the proposed repository at Yucca Mt. include hydrogeologic and transportation impacts.

    - Inyo County, California, which is adjacent to the Yucca Mt site, has received federal funding to conduct an independent evaluation of impacts from the proposed project.

    - Inyo County identified the following deficiencies with the Yucca Mt. DEIS: (1) inadequate evaluation of transportation impacts associated with transporting 77,000 tons of radioactive waste to the repository, (2) lack of thorough consideration of risks to regional groundwater, and (3) uncertainties regarding the long-term performance of the repository due to recent changes in the repository design.

    - Critics of the repository site the potential dangers of a release of radioactive material following a train or truck accident or terrorist incident involving these shipments.

- Nevada has developed a set of preliminary estimates of potential legal-weight shipments to Yucca Mt. through California and Nevada. They estimate 74,000 truck shipments, about ¾ of the total, could traverse southern California under DOE's mostly truck scenario. This would be an average of five truck shipments through California every day for 39 years. Under a difference scenario, California would receive an average of two truck shipments per day and 4-5 rail shipments per week for 39 years.

- Nevada also estimates that under a "best case" scenario that assumes the use of larger rail shipping containers, there would be more than 26,000 truck shipments and more than 9,800 rail shipments through California.

- The most probable rail routes identified by Nevada for waste shipments would impact Sacramento, the Los Angeles area, San Luis Obispo, Santa Barbara, San Bernardino, Fresno, Bakersfield, Barstow and other smaller cities and communities.

- The West's major urban centers grew around rail centers; if rail is selected it is likely that thousands of spent fuel shipments would pass through the area's most heavily populated areas, with limited alternatives for avoiding these areas.

    - A map developed by Nevada of likely routes to the repository is shown at http://www.state.nv.us/nucwaste/trans/images/18-1b.gif.

9. The State of Nevada opposes the proposed Yucca Mt. repository.

    - Nevada has stated that it has been proven that surface water has penetrated the repository depths at the site in less than 40 years at Yucca Mt. and that this violates the earlier criterion for the site that such water migration must take more than 1,000 years.

    - In 1996, Nevada found evidence in Yucca Mt. rocks of chemical remnants from atmospheric nuclear testing, which they considered an indication that water had seeped to the level of the proposed repository within 40-50 years.

    - Nevada officials have said that their research shows that even with man-made barriers, the Yucca Mt. will not isolate the waste for 10,000 years.

    - Nevada claims that DOE and the Nuclear Regulatory Commission are trying to change the design and the rules for the repository to qualify the Yucca Mt. site.

10. The State of California interagency technical working group has been established to review and evaluate the Draft EIS for the Yucca Mt. project.

    - This group consists of experts in groundwater hydrology, the National Environmental Policy Act requirements, transportation, emergency response, geochemistry; geology, and radionuclide chemistry.

    - Agencies participating on this group include the Department of Conservation's Mines and Geology, Energy Commission, Lahontan Regional Water Quality Control Board, Department of Water Resources, State Water Quality Control Board, Fish and Game, Parks and Recreation, Public Utilities Commission Railroad Safety Branch, Health Services, Office of Emergency Services, California Highway Patrol, Department of Toxic Substances Control, and the Department of Transportation.